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NEW METHODS OF INCREASING RAW MATERIALS FOR HUNGARY'S CHEMICAL INDUSTRY

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One of the most important goals of the Five-Year Plan is to make more raw materials available to Hungarian industry. Realization of this objective is particularly complicated in the field of chemistry. Here the domestic source must first be created, since raw materials have been obtained mainly from abroad in the past.

Hungary's chemical and allied industries must find their raw materials in by-products derived from coal, peat, natural gas, and oil, in mining and agriculture, and in agricultural and industrial waste materials.

Coal and Peat

The processing of coal was badly neglected before liberation, and gas and coke plants worked chiefly with imported coal. Under the Five-Year Plan the coal products industry will, however, make great advances. The new Dunapentele steel works will convert over a million tons of domestic coal into coke. The by-products of this new coke supply will include large quantities of organic compounds, such as benzene, anthracene, and coal tar, and will also supply the steelworks with high-calorie gas.

The Five-Year Plan also calls for distillation of brown coal at high temperatures. At the same time, low-temperature distillation of Trans-Danubian brown coal of high tar content is also to be extended. Coke will also be produced, under the plan, by means of high-temperature distillation, mainly from the coals of low tar content mined in the Borsod region.

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The coals richest in tar are in the Forna deposit with a tar content of 14-16 percent and the Tata deposit with 12-14 percent. These deposits are expected to furnish the bulk of the raw materials for domestic production of synthetic motor fuels, while the coke resulting from distillation will serve both as industrial and domestic fuel. The tars obtained as by-products from distillation will be utilized for the manufacture of mono- and diphenols, which must be imported at present. The scarcity and high cost of phenol homologues have handicapped development of Hungary's plastics and pharmaceutical industries in the past. Tar products, under the Five-Year Plan will be sufficient in quantity to cover the country's requirements in pitch and other tar oils. These goals will be reached through an enormous expansion of the country's coal products industry. Under the Five-Year Plan, ten times as much coal will be processed in Hungary in 1954 as in 1949.

Domestic peat resources are limited, because only two or three peat fields worth exploiting exist. Among these, Kalocsa peat is relatively the best. It could yield enough charcoal to replace all current imports and could furnish at the same time, a large supply of high-grade phenol. While peat products are of secondary interest to industry, they are extremely important for agriculture as, for example, in the production of nitrogen-enriched peat for fertilizers.

Crude Oil and Natural Gas

Hungary's natural-gas deposits may play a decisive role in the development of the country's chemical industry. The content of the wells now in operation shows a great variety. Some of the wells yield nearly pure methane, others show a liberal admixture of carbonic acid, while the Mihalyi wells yield practically pure carbonic acid.

A modern method of refining natural gas of pure methane content is partial oxidation, which yields acetylene and synthetic gases. Acetylene has many uses in industry and should form the basis of Hungary's plastics industry. The synthetic gases derived from the partial oxidation of natural gas furnish the basis for development of the nitrogen and synthetic motor fuel industries. Certain synthetic motor fuels can be manufactured by the hydrogenation of tar and others by low-pressure synthesis directly from gas. In all probability the plant now under construction for the processing of natural gas will eventually make the utilization of both methods possible. Although partial oxidation is not the only method of processing methane gas, it is the most desirable method from the viewpoint of Hungary's chemical industries. The high cost of electric power would make the production of acetylene from carbide very expensive, whereas production from natural gas requires relatively little electric power.

A substantial increase in the processing of crude oil is yet another object of the Five-Year Plan. In petroleum mining the foremost product is propane-butane. However, while in the course of the Five-Year Plan more propane-butane will be made available for home and industrial consumption, for the present it will not be used in the chemical industry, because the methods required for its processing are too complicated.

The chemically processed distillates of crude oil yield important products; thus, by hydrogenation and aromatization organic compounds are derived from benzene. The process is new and is still in its initial stages. Hungarian researchers, particularly Dr Joseph Varga, are doing significant pioneer work in this field. Production of crude oil distillates by heat belongs in the same category. Here the basic material is generally a heavy paraffin distillate, while the end products are partly light distillates and partly petrol coke, an important raw material of the synthetic coal industry. The gases

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obtained by the cracking process have valuable components. They contain ethylene, propylene and butylene, from which high-calorie-alcohols can be made by oxo-synthesis. Most of these gases, or rather high-calorie alcohols, will be available in sufficient quantity to meet the demand created by the Five-Year Plan. The ethylene derived by cracking will not be sufficient, however, to fulfill the requirements of the synthetic rubber industry.

Through the processing of mineral oil and mineral oil distillates, other essential chemical products may be obtained. Thus, by sulpho-chlorination of mineral oil distillates and by oxidation of paraffins, detergents and shortenings are produced. The quality of these detergents is equal to that of soap, while shortenings made in USSR by the oxidation of paraffin are also of outstanding quality.

Mining Products

The tempo of mining research has quickened since the introduction of the Five-Year Plan. The results are apparent already. Gypsum deposits have been found, which will supply Hungary's fertilizer and sulfuric acid requirements, at least in part. Processing of domestic raw materials is of great importance in this field, because certain components of sulfuric acid have had to be imported in the past. It is planned to produce at least one third of the country's sulfuric acid requirements from domestic supplies exclusively by the end of the Five-Year Plan.

It is generally known that Hungary possesses extensive dolomite deposits. Products derived from dolomite will replace imported magnesia salts and refractory bricks. All barite requirements have been imported thus far, although there are outcroppings of pure barite crystals west of the Danube in Hungary and barite is also present in the iron ore mined at Rudabanya. Barite may be used, among other things, for the production of lithopones, in part from zinc sludge. This process will require smaller imports than will the manufacture of other metallic paints which are used as protective coating.

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